through the various forms of treatment, and finally discards them all for iodide of potassium, the use and brilliant results of which he describes in Lecture XVII. With the exception of Tufnell's plan of perfect rest, and his own treatment by the iodide, he pronounces all modes of treatment as attended with risk or danger. He does not attempt to explain the action of the iodide; he confesses that this treatment has been based entirely upon empirical observation, and claims that it is, therefore, free from speculative ideas. It relieves pain and causes the formation of solid clots in the aneurismal sac. In some cases it irritated the stomach, brought on diarrhœa, and caused other unpleasant effects; but in nearly all he was able to return to it without renewal of the contraindication, and continue its use for months. He often gives three half-drachm doses daily. This treatment is profusely illustrated by cases in which results, aided by the recumbent position, were certainly remarkable. Balfour does not claim that aneurism can be cured by this remedy, or by anything else; but says: "I am perfectly certain that, at the present day, we possess no other remedial agent or mode of treatment which so surely gives relief or so frequently prolongs life as the iodide of potassium. While, therefore, I freely acknowledge the importance of recumbency, as insisted upon by Tufnell, and even admit the possible utility of limited diet within reasonable bounds, I claim for the iodide that it is capable of relieving aneurism in a most remarkable manner without any other treatment whatever, though its success may be promoted by such treatment."

Balfour's style is generally very clear and enjoyable, yet we occasionally find sentences half a page long, wheels within wheels, which are somewhat confusing; and here and there English which is actually bad. In common with other medical writers of Great Britain, he uses the term "diagnose," which offends the eye as sorely as a word misspelled. Worcester does not give the word "diagnose." Webster sets it down as "rare;" and rare it ought to be, for it is neither euphonious nor correct, diagnosticate being alone allowable in elegant English. He has made a serious and vexatious mistake in not heading his pages with the subjects of the various lectures. One is therefore obliged to turn without cessation to the index. This is annoying. If, too, Balfour had followed the example of Von Dusch by indicating the subject of every paragraph in the margin of the page, his book could be read with much greater convenience. It is handsomely printed, and, as a whole, especially in matter, is one of the best treatises we have ever read; and, if we were asked to recommend a work on cardiac disease, we should most decidedly say read Balfour. H. O.

ART. XXII.—*The Practitioner's Handbook of Treatment; or, The Principles of Therapeutics.* By J. MILNER FOTHERGILL, M.D., Member of the Royal College of Physicians of London; Assistant Physician to the City of London Hospital for Diseases of the Chest, Victoria Park; Assistant Physician to West London Hospital. 8vo. pp. 575. Philadelphia: Henry C. Lea, 1877.

EVERY art or science in process of evolution passes through certain well-defined stages of existence. The data upon which each one is founded are perceived disconnectedly at first here and there, perhaps a few at a time; and finally as these facts become more numerous, and their close relation more obvious, the human mind by a series of reasonings is capable of formulating them into classes. So it is with therapeutics, which is an art as well as a science. In the development of this branch of medicine, the human mind has been busily employed for the last two thousand years in collecting and hoarding up invaluable facts, but has, until within a comparatively recent period, not only been satisfied with the crude possession of this raw material, but has stubbornly resisted every effort to formulate or organize this store of knowledge. Indeed, it has held that the highest aim of medicine consists only in obtaining a clear notion of the symptoms, course, and condition of disease, together with the indicated remedies, without being allowed to indulge in any pathological hypothesis, or explanation of the *modus operandi* of medicines; in fact, this last was considered a medical heresy. These were and are the so-called practical men of the day, and they represent empiricism in its purest form. Now, we do not discountenance empiricism as long as its practice is necessary, but honour it for the good which it transmits to us; yet every one must know that it requires almost a life-long experience to acquire such knowledge, which, unfortunately, is not within the reach of the younger members of the profession, and to whom especially such a method of study offers but a gloomy immediate future. Such a state of things has caused a noted authority to say that though "many persons of great experience practise moderately empirically, he who begins upon principle, and then profits by experience, must become a much more skilful practitioner."

But there are not wanting men who even hold the decided opinion that therapeutics can never approach anything like a certain science. Indeed, the mass of the profession to-day is guided by the blind laws of empiricism, and there are many who are not slow in manifesting their disapproval to those who endeavour to place the study of therapeutics on a more rational and scientific foundation. Whether or when therapeutics will ever become an exact study is not our purpose to discuss at present, but it is exceedingly idle and certainly an evidence of a lack of proper intelligence to say that it is impossible, when in the midst of this intellectual and scientific age we observe so many of the simpler arts and sciences, which are built on far less complex data, liable to so much fallaciousness and uncertainty. Let the laws of physiology, of chemistry, of pathology, etc., become more fixed and reliable, and we shall find that therapeutics will advance in a like manner, and become a study of greater exactitude.

The present state of therapeutics would wear a very discouraging aspect had we not the assurance that a better time was approaching. The work which forms the subject of this review is a marked evidence of the transition stage between the old and the new epoch. It retains the usefulness of the past and embodies the valuable advances which have been made in more recent times. The aim of the author is well told in the following language; and how completely he has fulfilled his promise we shall in a measure endeavour to point out by what follows: "The aim of the writer, if it can but be accomplished, is to supply a digest of the general principles of therapeutics, to arrange well-known facts of practice, together with the explanations furnished by pathological research and physiological inquiry, in such array and form, that the treatment of each individual case shall become a fairly intelligent and rational procedure, rather than a groping empirical guess. Failure, even, may indicate to some one else a line worthy of pursuit."

One question of paramount importance at present is that of alcohol, and we shall at once consider it. And although we are not fully convinced that our author himself possesses a very definite and accurate conception of the therapeutic action of this substance, yet it is surely a sign of encouragement to find that he has recorded his opinion in favour of the belief that alcohol is oxidized within the body, and thus produces force for the maintenance of the animal functions. He says on page 230 that "The recent experiments of the late Dr. Anstie and Dr. Dupré have placed beyond all question or honest doubt, the fact of the oxidation of alcohol within the organism. If alcohol is oxidized in the body, then alcohol is a true food or furnisher of force."

The above expression is concise, and leaves no doubt on the mind of the reader in regard to its meaning; and it would indeed be a great credit to the members of the medical profession if they would take intelligent heed of this warning, which strongly indicates the drift of professional opinion on the question of alcohol on the other side of the water; for we must frankly acknowledge that upon no other subject have we found within our perhaps too limited experience, a display of greater superficiality and prejudice than upon this one. It is, indeed, no surprise that the common or non-scientific portion of the people possess such erroneous and fanatical ideas concerning the action of alcohol and the prevention of its evils, when we find the professional men, those who ought to be the leaders of thought in this direction, and to whom frequent appeals are made for their opinion, so very slow in learning to base their views on the latest scientific inquiries. From the former, under such circumstances, not more can be expected; but for the latter, who profess to give this subject all the attention it deserves, no palliation hardly exists. Just let us glance at our abundant literature on this topic, and we shall find the most loose and vague definition of the action of alcohol and of the mode of its administration in disease; and how often do we see and hear medical men who are constantly boasting that they are able to treat the most devitalizing forms of disease without the aid of any alcohol—and this, too, in the face of and in direct opposition to the teaching of clinical and theoretical evidence; no doubt, if the truth were ascertained, much to the detriment of their patients. This is done under the deep-rooted delusion that alcohol, though it affords a passage of safety to the patient across the dangers of disease, will also fate him to become an inebriate. That such unfortunate instances may and do occur we have no desire to deny, yet we hold that they are not of such frequency as the total abstainers would have us believe; and that this does not arise from the simple administration of alcohol, but from an ignorance how to use it properly; for we have firm faith in the rule that in order to do a thing right we must first know *how* to do it.

Such discordant feelings can bring nothing but discredit on medicine; and there is surely no reason why a most noble profession like that of ours should carry such blemishes on its shoulders on account of a subject like alcohol, upon which the most thorough-going researches have been made of late. If it were upon some other topic whose data were less certain there would be some hope of toleration for an erroneous opinion, but investigations on alcohol are ample and sufficient enough to render an intelligent decision in regard to its main characteristic action.

But we are not satisfied that some of the therapeutic principles which are laid down by Dr. Fothergill can be safely followed by those who wish to make inquiry in this direction. That all our remedies must have a fixed action follows from the universal law of the persistence of force, no less than from the oft-recognized fact, which of course is brought about by the above law, that the action of some medicines can be foretold with great accuracy and precision in many instances.

Now a therapeutic principle serves to combine or verify the effects which are common to and are produced by one or a number of remedies, but in treating on the subject of "counter-irritation," our author endeavours to explain the phenomena produced in this process by means of vascular agency; but on investigation we shall find it impossible to believe that the good effects of the so-called counter-irritants can be explained by the fact that in the immediate field of their influence they invite a larger amount of blood than usual, and thus draw the blood away from and diminish cell activity in the diseased part below. He says on page 307 that

> "the good effects here [of counter-irritation] are distinctly intelligible by the law of Schrœder van der Kolk, that the vascular supply of the deep-seated parts is derived from the same arterial trunks as that of the superficial parts. Any dilatation of the cutaneous branches and increased blood-flow in the superficial distribution will diminish directly the current in the deep-seated vessels. Thus in inflammation of the pleura for instance—the costal pleura, that is—the application of dermal irritants, either heat or vesicatories, will dilate the cutaneous terminations of the intercostal arteries, and diminish the blood-supply to the pleural arterioles, and so lessen the vascularity of the inflamed area. This is clear enough. In the same way dilatation of the cutaneous vessels of an articulation, say the knee, will be followed by a lessened blood-flow in the deep articular branches of the arterial trunk common to both."

This is the old depletory theory which is certainly involved in several self-evident contradictions. For example, no one doubts the great efficacy of some forms of counter-irritation in neuralgia, especially blisters, yet true neuralgia is always associated with a deficiency of healthy blood, or, in other words, is in a state of anemia—which state, of course, produces a depressed vital activity very readily. Now, draining the blood away from the already half-starved nerve is the height of folly, for it must be very clear that, instead of elevating and improving the nutrition of the suffering nerve, by such a process it would become still further depleted, and its diseased condition aggravated. Or again, take any cutaneous inflammation, eczema for instance, and where, let us ask, is the medical practitioner who has not witnessed a disappearance of the redness and inflammation, and a healthy colour of the skin substituted under the influence of a poultice? The evident hollowness of this theory becomes very glaring in this latter case, for here the counter-irritant is brought in direct contact with an inflamed portion of the skin, and if it were true that this agent relieves disease by simply inviting a larger amount of blood into its immediate vicinity then it should take place here, but instead of this the part becomes paler, and the inflammation disappears. Moreover, if we endeavour to explain by this theory the action of counter-irritants on deep-seated inflammation, as in pneumonia, where their value is universally recognized, we shall find its shortcomings still more obvious. Let us suppose, for the sake of argument, that an inflamed lung contains about ten or twelve ounces more blood than it does in the normal state, and now let a reasonably large blister abstract from the skin and subjacent tissues about two ounces of serum, which is surely a liberal allowance. The drain, of course, falls primarily upon the mammary, intercostal, and thoracic bloodvessels, which are given off by the aorta and other principal vessels. Hence the whole circulation through the medium of the aorta is drained, each portion of the blood receiving its proportionate share. Now, by abstracting two ounces of serum from the whole body of the blood (which amounts to near 300 ounces), we can imagine what an insignificant loss would be sustained by one or both lungs. Such are some of the invulnerable obstacles in the way of accepting the depletion theory of counter-irritation as being the true one, and it is very manifest that a theory which does not make clear all the facts which it is professed to explain must fall to the ground and another one be substituted.

Now, however much capriciousness may be attributed to other remedies, we firmly hold that only one general principle pervades the action of counter-irritants, viz., that of *increasing molecular motion.* All the so-called counter-irritants, whatever their nature, such as cantharides, mustard, nitrate of silver, ammonia, croton oil, iodine, turpentine, the various warm poultices, hot-water dressings, etc., all conform to this law in their action; and though they act with different intensity, yet their action differs only in degree and not in kind, in quantity and not in quality. But since it is conceded that inflammation is a process of increased molecular activity itself, it may seem somewhat paradoxical to recommend its treatment with an agent which tends to accelerate molecular motion, and thus apparently increase the trouble instead of lessening it. We must always recollect that all disease is a process of disintegration, and inclines to diffuse and spread until met and counteracted by healthy molecular motion. All motion, whether molecular or massive, takes place in the line of least resistance or greatest traction, and if the resistance is less on the side of health than it is on that of disease, then diseased motion will spread, *vice versa;* and if there is not sufficient force present in the body to resist and counter-balance the progress of disease, then death must inevitably follow. This resisting power varies in different individuals, and in the same individual at different periods, and it is well exemplified in the processes of mortification and gangrene, where the line of demarcation forms on the battle-ground between morbid and healthy molecular action. Indeed this line may be fixing itself in a certain locality, and the strength of the patient be suddenly depressed still further, thus diminishing the resistance of the body and allowing the line to settle still closer to the central part of the body. And, again, a strong healthy subject is totally exempt from the invasion of these diseases under almost any circumstances, and it is only where is found a vitiated state of the general health that those diseases are prevalent. The same conflict between healthy and diseased action is well witnessed in chronic ulcers where the line between health and disease advances and recedes, making the ulcer appear large at one time and small at another, in direct correspondence with the strength of the patient or the part, and it is a noted fact that the line of treatment which is pursued by all rational practitioners in these diseases is that of endeavouring to maintain or enhance the resisting power of the patient by various means, among which counter-irritants occupy a very important place. In threatened invasion of mortification and gangrene the early application of a warm poultice will often avert the danger, or at least tend to circumscribe it, and limit it to a smaller area than if left to its natural course.

Now the inference which we wish to draw from the above is that, by the agency of counter-irritants, this line of battle between health and disease can be moved or shifted; and that we can deflect disease and diffuse healthy action into regions previously invaded by disease, by inciting weakened molecular action to increased and renewed energy. Upon this view of the action of counter-irritants can be based a rational theory which will explain all the beneficial effects which are derived from their employment. The depressed state of nutrition and oxidation in neuralgia is quickly aroused by their application; counter-irritants, by their power to accelerate molecular motion, aid in oxidizing the morbific deposits in gout and rheumatism, and so give prompt relief to the excruciating distress which these deposits occasion. In inflammation the application of an external stimulus to the healthy tissue which surrounds the morbid process imparts strength and vigour to it, and thus forces and disseminates healthy action into the diseased area.

Great care must be exercised in the selection of the proper counter-irritant, for it is a very easy matter to generate too much molecular motion on the surface, and thus may become a source of aggravation rather than one of benefit to the disease. This appertains especially to the different forms of inflammation. As a rule, the more recent the disease, other things equal, the easier is it influenced and its progress checked; hence the milder counter-irritants, such as poultices, are to be preferred; but, in the well-settled or chronic forms, the more active measures, such as blisters or croton oil, are indicated. Indeed, Dr. Fothergill, on page 348, recognizes the importance of this discrimination when he says that "The utility of blisters in pneumonia is doubtful. The advocates of such a plan have failed to furnish convincing evidence of the beneficial effects produced thereby." And on page 343, in alluding to the treatment of the same class of diseases, he says that, "In acute bronchitis, ... it is of great importance to keep the chest enveloped in large and hot poultices."

But the question may be asked how is this impulse, which is generated by counter-irritants, transmitted into the region of structures which have no direct anatomical connection with the seat of application, as in pneumonia, for instance? To this we reply that we have evidence that such impulses are transmitted in certain other conditions; for example, when one pleura is inflamed it is of very frequent occurrence that the opposite layer also becomes involved; and a single tubercle in the lung often occasions a patch of adhesion between the pleuræ. Other proof could be given, but there can be no doubt that molecular motion is diffused through contiguous textures in the same manner as it penetrates into the deep-seated structures of the joints in gout and rheumatism.

We may just as well here as at any other place enter our protest against the further use of the term counter-irritation, for we believe it to be misleading, and misrepresenting the actual *modus operandi* of these remedies. Though we are aware that some counter-irritants produce an irritation on the surface of the body, yet this irritation is merely the resultant of the violent chemical and physical changes which took place between the agent and the bodily tissues; and we firmly hold that, in order to obtain their constructive effects, this irritation must not be transmitted to the seat of disease. It is the impulse of *stimulation*, and not of irritation, which is communicated to the cells of the body, and which invigorates them.

Of course we can, but in a very imperfect manner, in these few remarks, indicate the general *modus operandi* of the so-called counter-irritants, and if we have failed to give the reader a satisfactory account of what we intended to convey, we hope we have been successful in showing the untenable position of the depletory theory.

Much difference of opinion exists among the members of the medical profession in regard to the action of beef-tea. Some claim that all the benefit which is derived from its administration is brought about through and by the organic salts which it contains; and this view Dr. Fothergill seems inclined to favour, or at least he assigns to it a very inferior position as a food. He says, on page 537, that,

> "As a food, beef-tea ranks low. It contains meat-salts, a small quantity of albumen, and a little gelatine, together with some advanced nitrogenized matters, useless in histogenesis. But there is little in it to repair tissues, and less in it to sustain life; so far as our knowledge yet extends. There is little real force-bearing material in the protean compounds of beef-tea. Little actual force is evoked by the oxidation of nitrogenized compounds in the body. For the starving fever-patient, to give him beef-tea alone, is almost to give him a stone when he asks for bread."

Now beef-tea is a remedy which has had the reputation of a nutriment from the very earliest times in medicine, and we do not feel disposed to pass it by in such a slight and unceremonious manner, for we truly believe, with all due deference to the opinion of the author, that it is a most useful substance to sustain the body under great exhaustion. Beef-tea and alcohol form the sheet anchor in the treatment of fever, in the way of nutriments, and they are both essential because they fill two essential indications in the treatment of these diseases. We agree with the author, however, in this, that "There is little real force-bearing material in the protean forms of beef-tea;" but we must not overlook the fact that it is not the "force-bearing material" alone which we desire and must have in the treatment of fever, for we also need material with which to build up the rapidly wasting tissues.

The eminent Dr. Pavy, in his *Food and Dietetics*, says that "The animal body may be regarded as holding an analogous position to a machine." Now, in order to operate a machine successfully and persistently, two factors are necessary—one a supply of force, and the other a supply of material with which to renew and rebuild the structure of the machine. The former is furnished by the hydro-carbons and carbo-hydrates; and the latter by the nitrogenous and inorganic foods, speaking in a general way. In the case of "the starving fever patient," there is a certain and decided waste of both the force and texture of the body, and the crying and pressing want is a liberal supply of material which will furnish these elements; and both custom and experience point to beef-tea as the tissue-building, and to alcohol as the force-giving food, because they are the most digestible, and assimilable, and nutritious substances which the profession can command under these circumstances.

From personal experience—if this has any weight—we can well testify to the nutritive efficacy of beef-tea, and have ample grounds for disbelieving that its value simply depends on the organic salts which it possesses, or that it ranks so low as a nutriment. Among others, there is one striking example of its usefulness to which we can refer at present. It is a case of inanition in an infant now six months old. The mother of the patient had three children, the first of which was still-born, the second died nine days after birth from inanition, and the third began to decline and fail in health when she was three weeks old. Knowing the tendency to death in her second child, and suspecting that it was due probably to the inefficiency of the mother's milk, we immediately determined on a thoroughly supporting treatment, and ordered fifteen drops of "Valentine's preparation of meat-juice" three times a day, together with diluted cow's milk and lime-water, and, of course, kept up the mother's supply of milk too. The cow's milk, however, had a tendency to curdle in spite of the lime-water, and so was discontinued. The child began to improve in a few days, "and got fat and solid," as the mother expressed it. In the course of a few months the stock of meat-juice became exhausted; the mother concluded to do without it, since the child improved so remarkably; and she relates that on the second day after the meat-juice was left off, "the little girl went quite thin and soft over the whole body, and became very fretful." We ordered a renewal of the meat-juice, and in the course of three or four days the child became healthy and well again, and continues so up to the present time.

Now the body of the rapidly-growing infant demanded something which the inadequate milk of the mother could not supply. That the meat-juice did not merely furnish the salts which it contains is well illustrated by the fact that the child became the possessor of textures which could not possibly have been furnished by these substances, for the child became fat, and her flesh hardened; so evidently there must have been an improvement in the muscular structure at least. Milk is the only natural and suitable food for infants, but in this case we have reason to believe that this child would have been reduced to starvation had she been compelled to depend on the mother's breast for nourishment; and in the meat-juice we found such an efficient substitute for the milk in this case that we almost look upon it as an agent which is equal to milk in point of nourishment, for it well supplied all the elements for development which the child's body needed; and it is an established fact that the greater portion of the albuminous tissue in the body is furnished by animal or nitrogenous food, and we never yet could see any good reason to doubt that the same elements can be supplied to the body in the more concentrated form of beef-tea or meat-juice, and thus make it one of the most desirable tissue-builders that we possess.

On page 45 we notice a typographical error, which is also found in the English edition, and which might lead to disastrous consequences. In transcribing Dr. Foster's formula for an ether mixture to aid the digestion of cod-liver oil, the bulk of the mixture is directed to be increased by the addition of water to eight *drachms*, instead of eight *ounces*, as Dr. Foster directed. As the prescription is printed, the patient would take, at a dose, from twelve to sixteen drops of dilute hydrocyanic acid, which might render the repetition of the dose or further treatment unnecessary.

As a whole, however, Dr. Fothergill's work is a success, and will be welcomed by the profession as a boon. To the young practitioner it furnishes a world of precious advice, especially in the concluding chapter, which discusses the proper relation which he sustains to his patient and to his professional brethren; and we can, after a thorough perusal of the work, with much confidence say, that Dr. Fothergill deserves lasting praise for the pains-taking manner in which he has performed his arduous task; and that, as far as it treats, it is superior to any other book on therapeutics with which we are acquainted.

T. J. M.